Shear Correlations update

SEP 22 2015 (also July 14)

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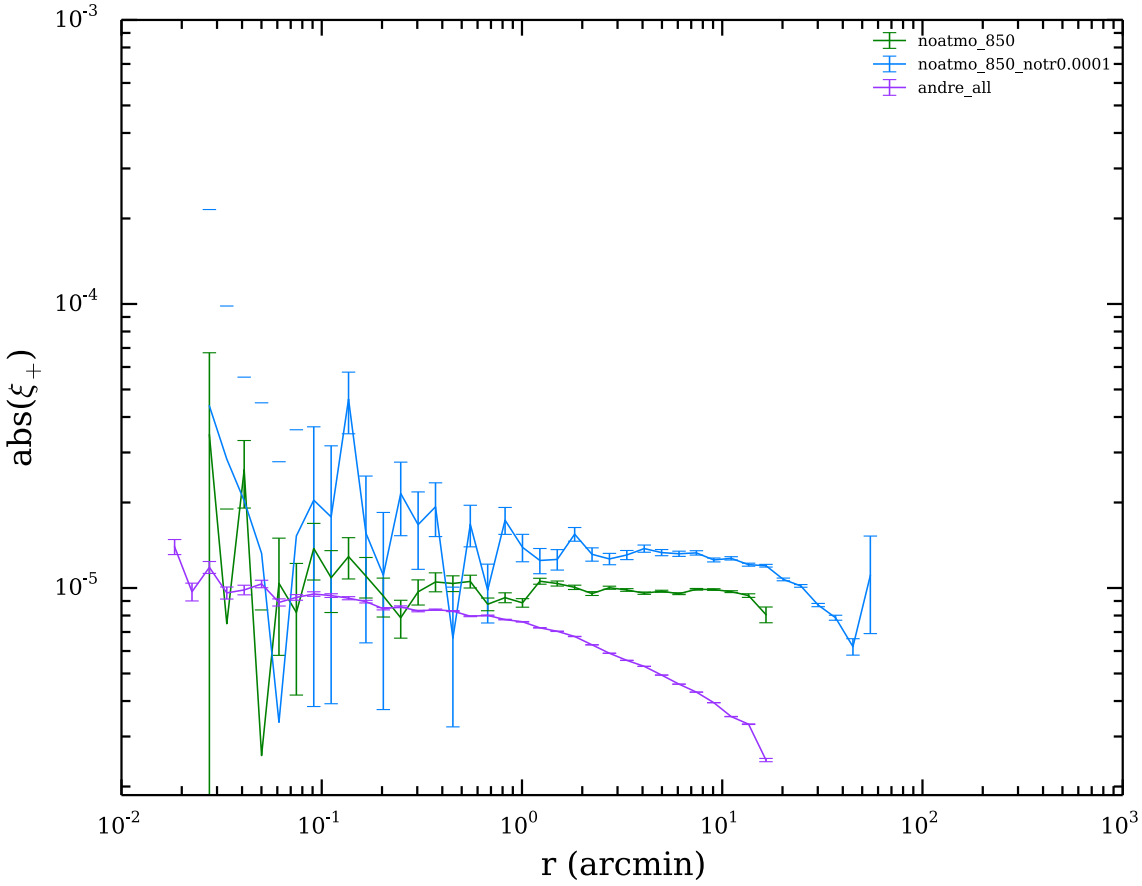
Goals

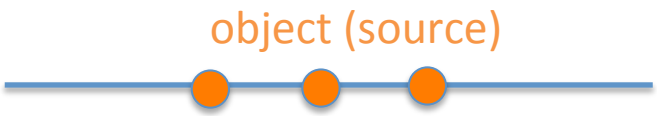
- compare shear from x-rays and in Phosim
  - only sensor diffusion, no TRs etc; no atmo

- learn about spurious shear in LSST and reproduce Chihway's results with updated Phosim

compare with x-ray



PHOSIM?



wavelength, RA, DEC, x&y location, number, type,.. etc

atmosphere

clouds, wind, temperature, water pressure,… etc

dome seeing

telescope

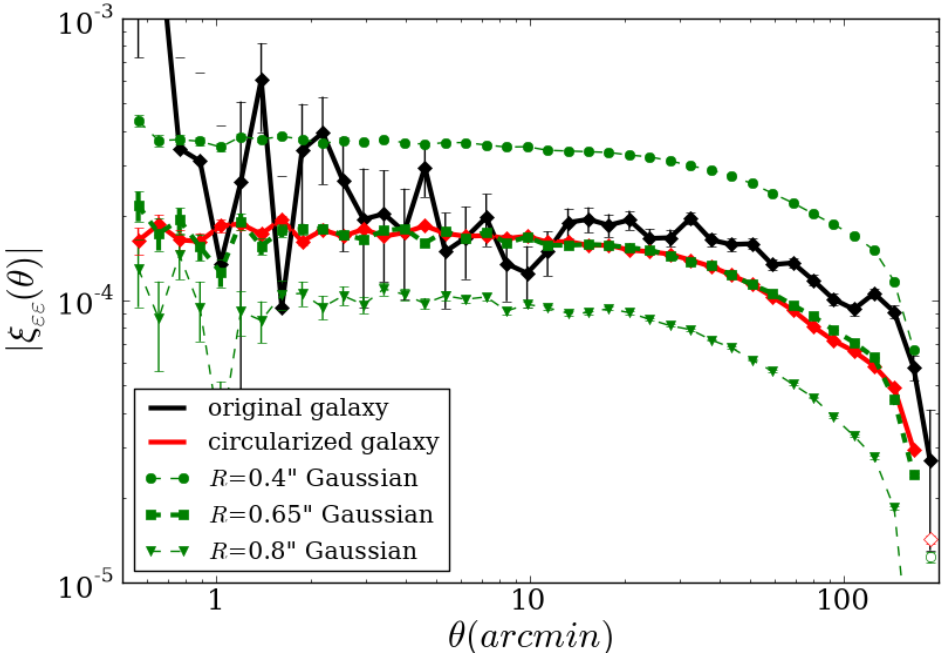
tracking, shutter error,… etc

instrument

ccd temperature, silicon thickness,…etc

can change object size by changing:

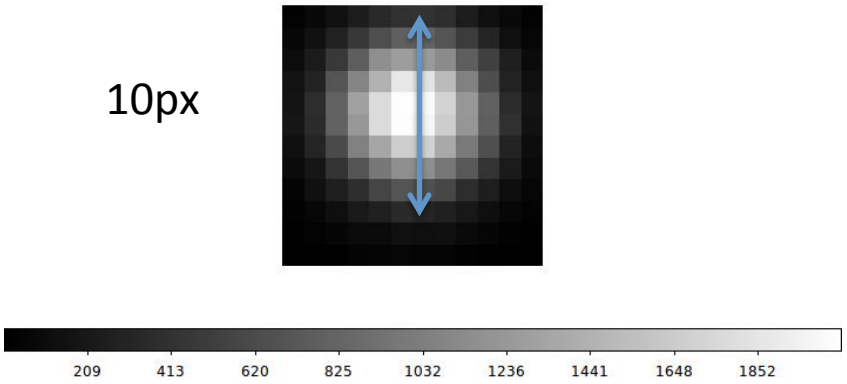
- size – before atmosphere
- dome seeing – after atmosphere



changing sigma of object
LSST 1pix=0.2”

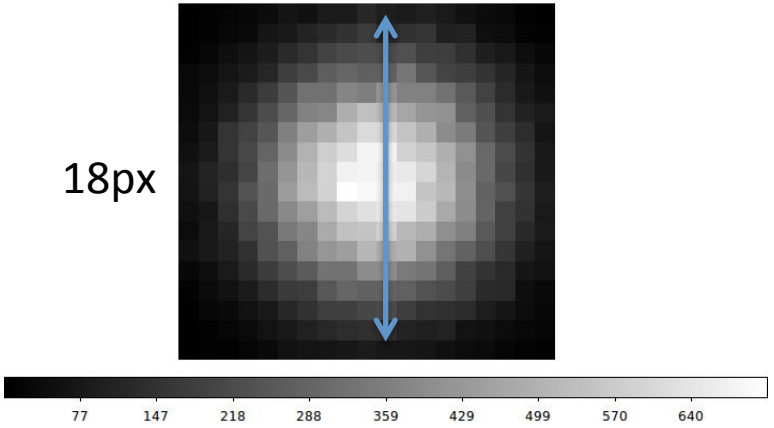
sigma=0.4”, atmosphere on

10px



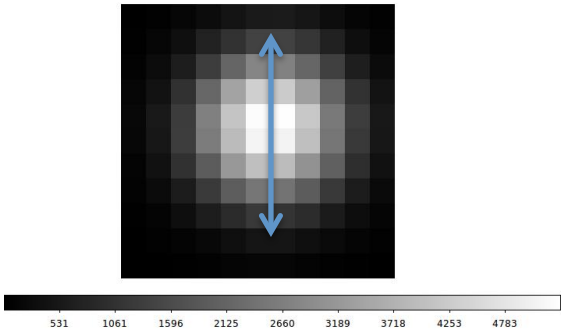
sigma=0.8”, atmosphere on

18px



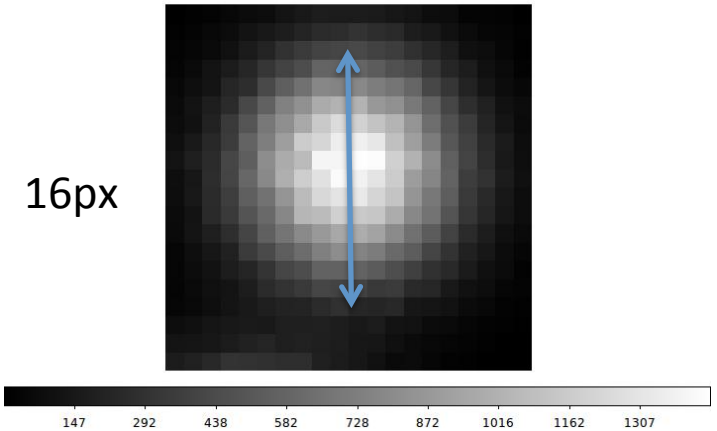
sigma=0.4”, atmosphere off

8px



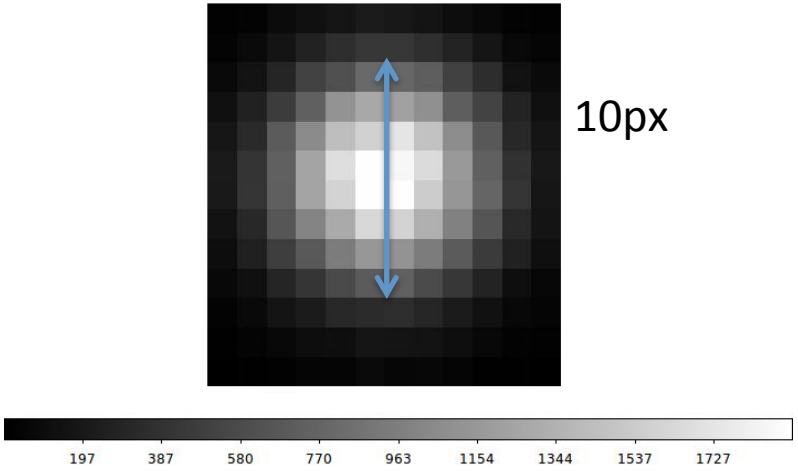
sigma=0.8”, atmosphere off

16px

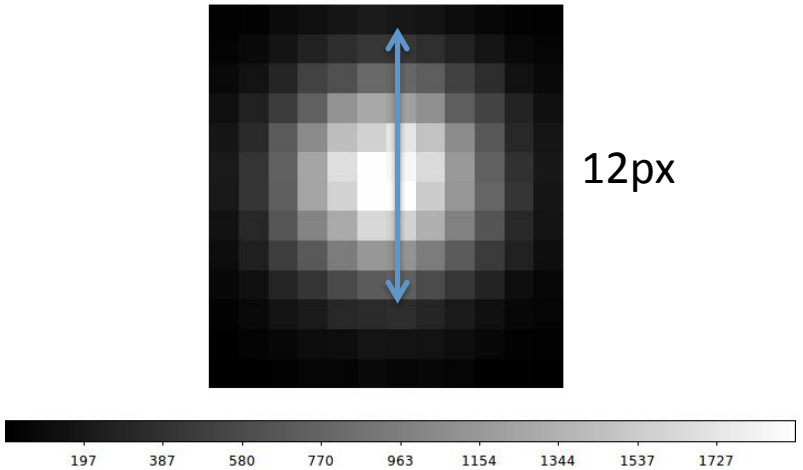


changing dome seeing FWHM sigma of object=0.4”

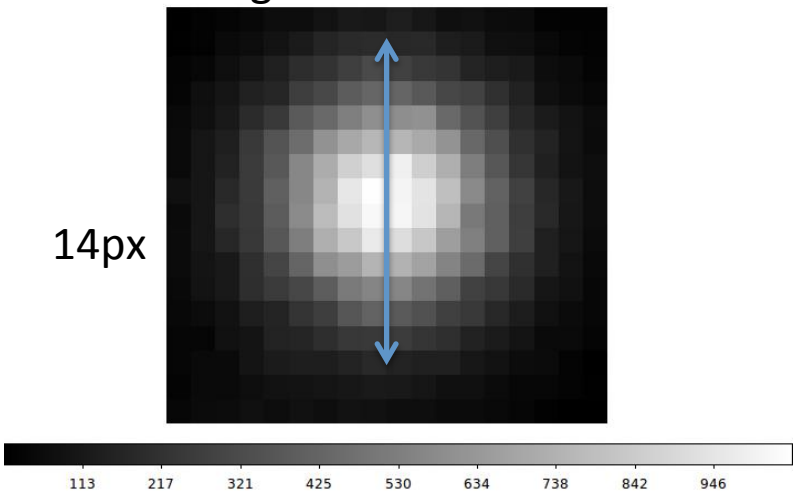
dome seeing 0.5”



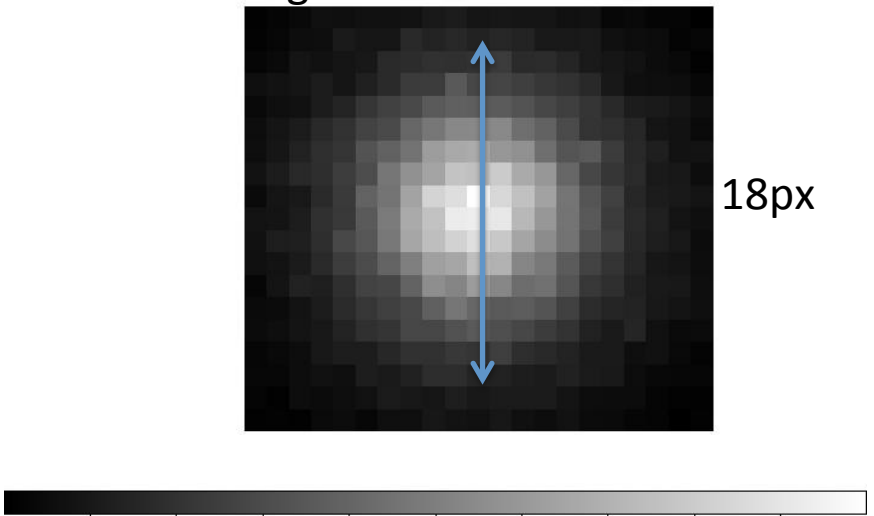
dome seeing 1.0”



dome seeing 2.0”

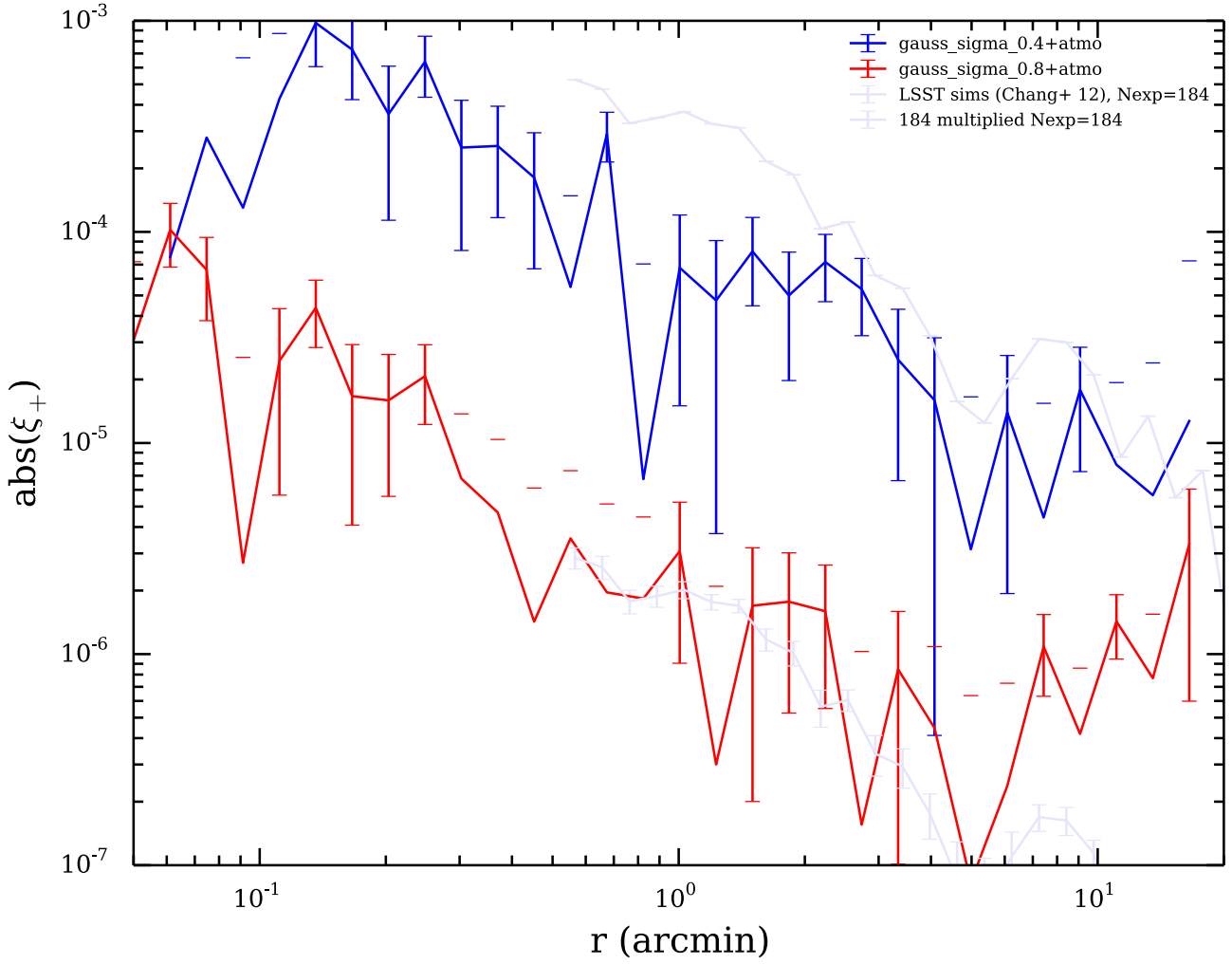


dome seeing 4.0”

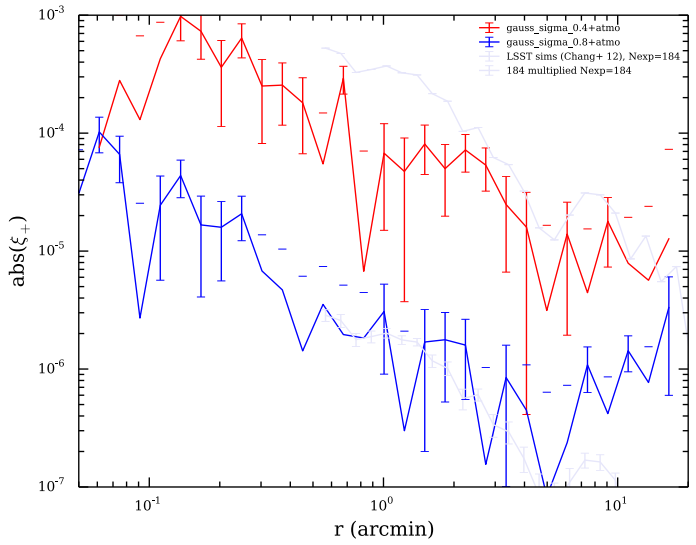


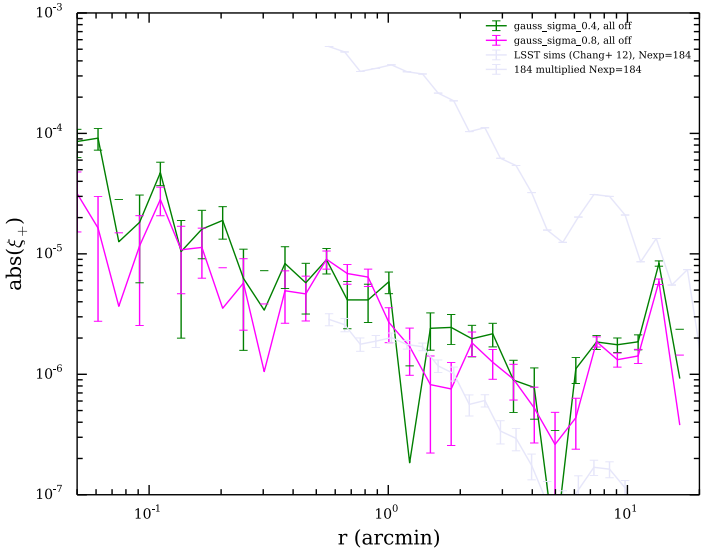
Changing objects' sizes -atmosphere on

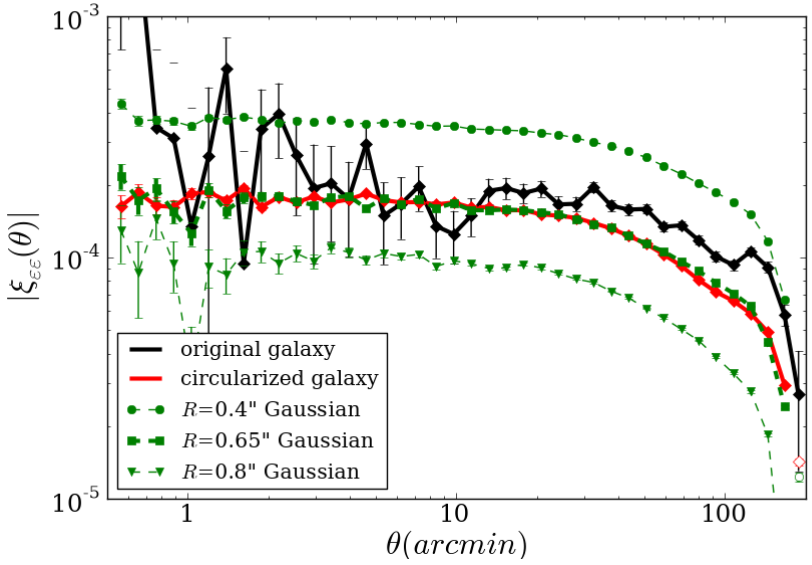
shear correlation



compare with Chihway arXiv: 1206.1378v4

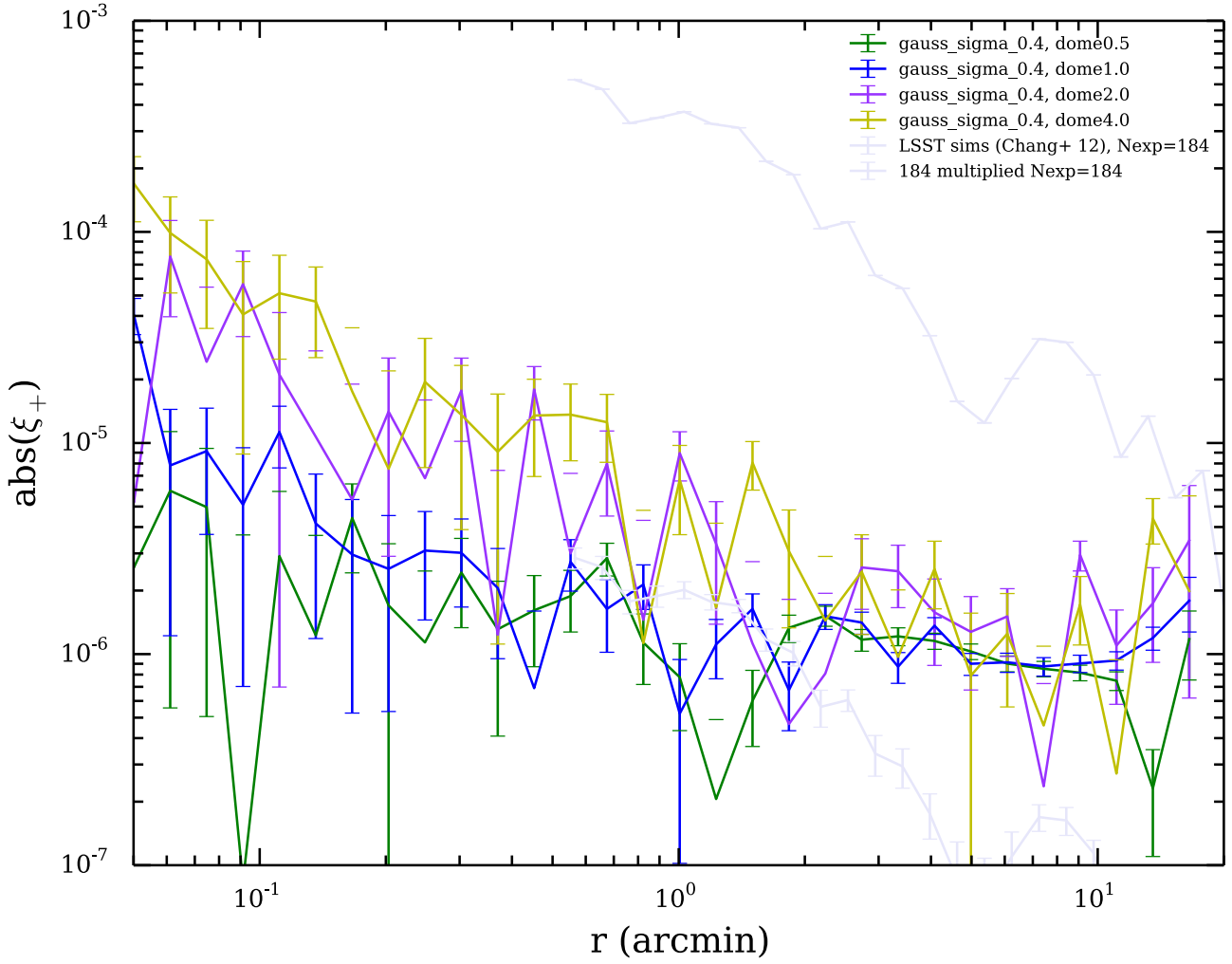




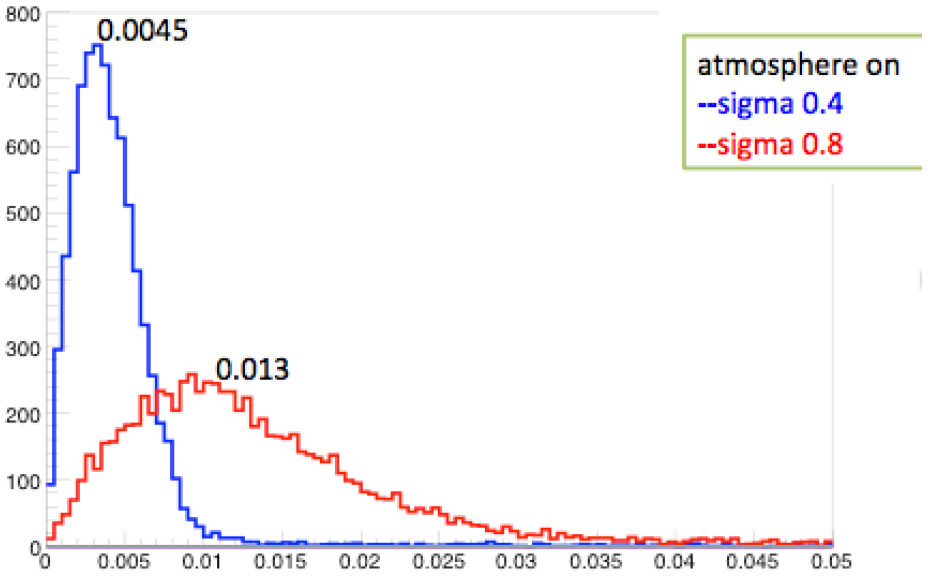


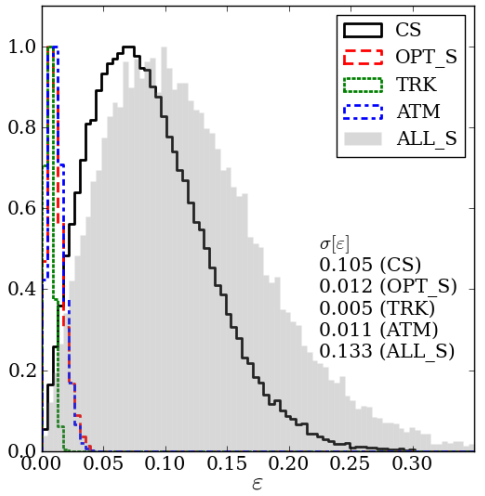
Larger object
harder to squeeze

Changing dome seeing FWHM atm off

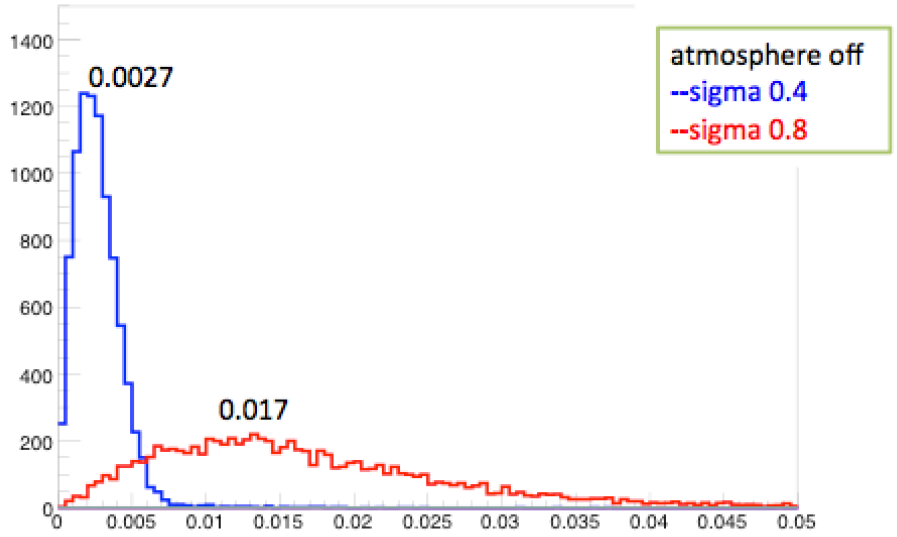


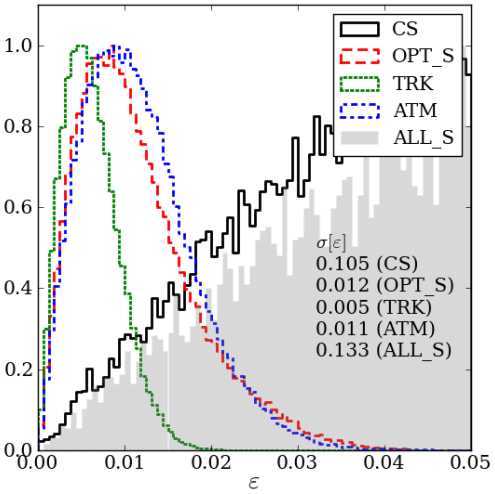
Ellipticity





(a)

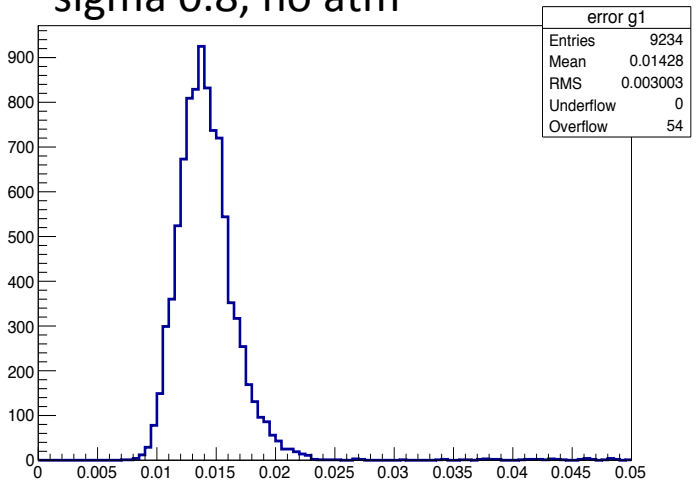


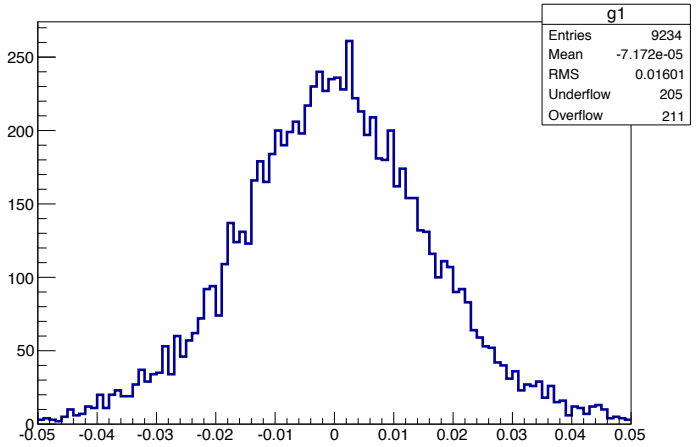


(c)

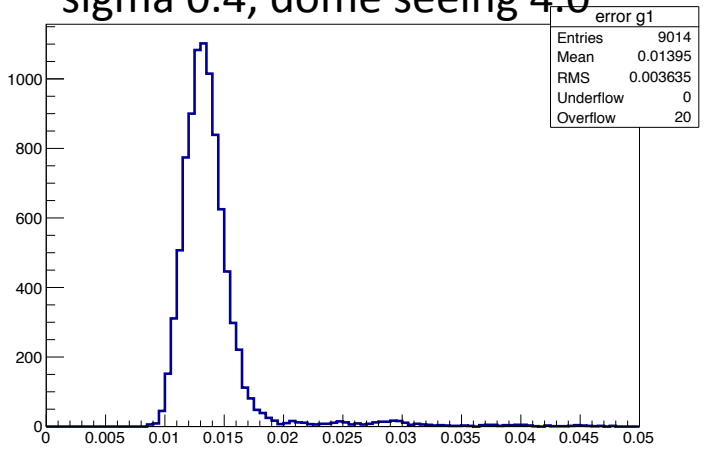
g1 error and g1

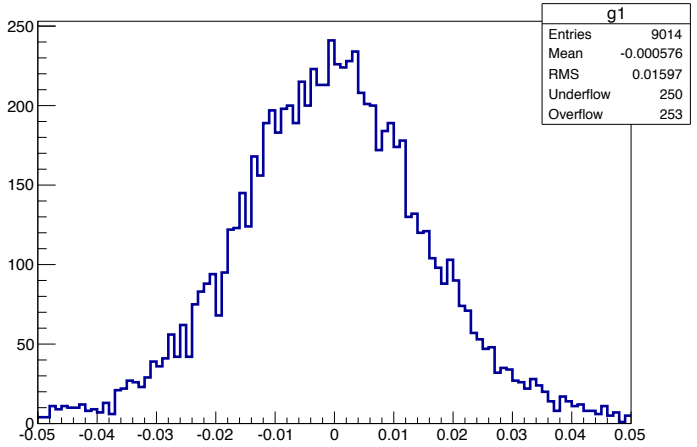
sigma 0.8, no atm



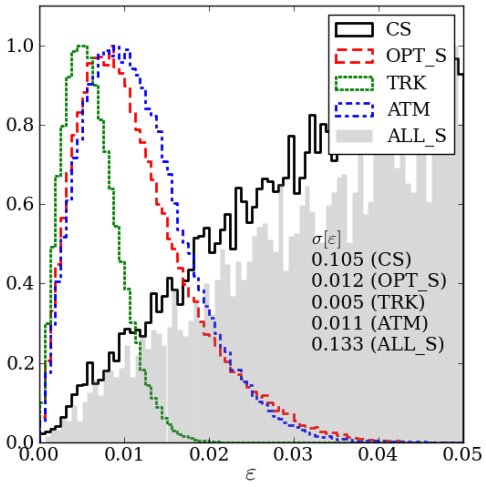


sigma 0.4, dome seeing 4.0

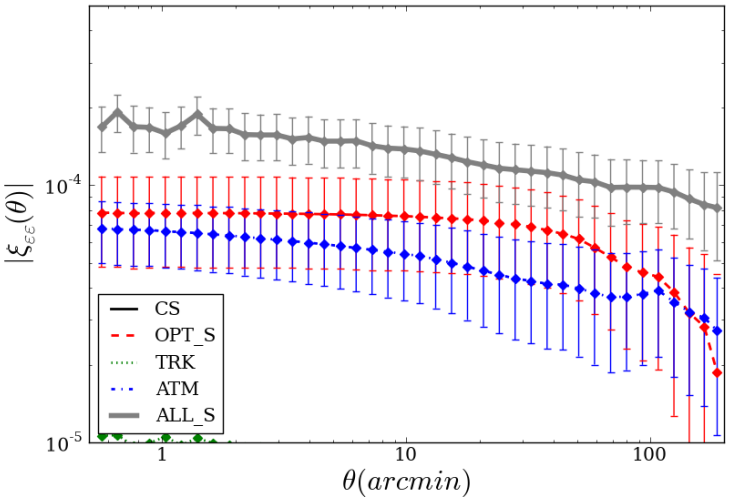




Plan



(c)



(d)

- Non-stochastic effects
- Stochastic effects
  - counting statistics(largest noise)
  - stochastic optics effects
  - tracking errors
  - atmospheric effects